ded ; while others contend that the type most nearly agreeing with the diagnosis, or which has its characters best expressed in the name itself, should be regarded as the type of the original genus. Still others say that the first author who divides and properly restricts a genus originally founded upon heterogeneous materials has the right to determine, arbitrarily, which shall retain the old name, and which shall receive new ones. Now all such confusion is avoided by simply stating which species is recognized as the type in founding a new genus.—Silliman's *American Journal*, March 1866.

The Placentoid, a new Organ of Anthers. By M. Chatin.

The organ now to be made known has not yet been indicated. The name of *placentoid*, by which we propose to designate it, recalls the analogies of form, position, and, to a certain extent, of function which it has with the placentas of ovaria with axile placentation. We shall consider it under the points of view—

1. Of morphology or organography ; 2, of histology ; 3, of biology ; 4, of taxonomy ; and 5, of philosophy.

1. *Morphology of the placentoids.*—These organs, by the place which they occupy in the cells and the forms which they put on, recall the axile placentas of bilocular ovaria. If we make a transverse section of the ovary of a *Solanum* and of one of its anthers, we find in each of the cells of the latter, as in the ovarian cavity, a fleshy body which advances towards the middle of the chambers of the ovary and of the cells of the anther.

In consequence of the considerable space which it occupies in the cells, the placentoid often greatly reduces that left for the pollen, nearly as, in a great many Solanaceæ and Scrophulariaceæ, we see the seeds pressed between large trophosperms and the valves of the pericarp. Sometimes the placentoid advances so far towards the opposite valve as to touch this with its extremity, thus nearly subdividing each cell into two. The section of a young anther thus constructed is subdivided into eight subcells if the anther be complete (*Hemitomus*), or into four if, as in *Salvia* and *Westringia*, the anther should be reduced to a single cell. Some plants (*Justicia flavicoma*) only present placentoids upon one surface of the dissepiment ; this organ is consequently wanting in the cell placed on the opposite side.

Like the dissepiment, the placentoids are shaped out of the parenchymatous mass of the young anther.

The duration of the placentoids is limited ; they disappear towards the period of the maturation of the pollen, sometimes leaving their traces in the form of two small appendages approximated to the connective by the retraction of the dissepiment which bears them.

To sum up, like the dissepiment, and even still more than this, the development of the placentoids is connected with that of the pollen.

2. *Histology of the placentoids.*—We have always found the placentoids formed by a parenchymatous tissue very similar to that which

forms the dissepiment. Like the latter they admit neither fibres nor vessels; and in this respect their parallelism with the placentas can no longer be traced—just as, moreover, we cannot compare the pollen lying free in the cells, like the spores in the capsules of mosses, with ovules attached to placentas.

In the placentoids we have never observed the so-called fibrous cells which form a part of many dissepiments; it would appear, therefore, that the presence of placentoids, always of a parenchymatous nature, is connected with that of dissepiments of the same histological nature.

The placentoids, like the dissepiments, are usually covered by a fold of the nutritive membrane or third membrance of the anther.

3. *Biology of the placentoids.*—The function of the placentoids appears to be to assist in the formation of the pollen. They originate about the same period as the latter, follow it in their development, and disappear when, as its maturation approaches, they become useless to it, their persistence being even capable of hindering its dissemination.

The essentially parenchymatous structure of the placentoids, and the nutritive membrane which clothes them, and of which they thus serve to multiply the surfaces or points of contact with the pollen, are evidently conditions appropriate to the part which we ascribe to the new organ. We are, moreover, the more struck with the utility of an organization which has the effect of bringing nutriment everywhere within reach of the body to be nourished, as the latter (the pollen) does not, like the ovules, receive its nourishment by continuity, but indirectly and by simple contiguity.

4. *The placentoids in their relation to taxonomy.*—When a new organ is discovered in plants, it becomes necessary for the history of this organ to inquire what relations of existence it may possess with the natural divisions of the vegetable kingdom. This first point being determined, it will become possible to appreciate the signification of the existence of placentoids in its relations with the various degrees of organic elevation of species of plants.

Placentoids exist in no monocotyledonous plant. Among the Dicotyledons, the Dialypetalæ (Monochlamydeæ and Thalamifloræ) are also destitute of placentoids. The same might be said of the Calycifloræ if we had not observed these organs in *Cassia marilandica*. There remain the Corollifloræ; and it is in a certain number of families of this class that we have found the anthers to be habitually provided with placentoids, which exist

In the *Gentianaceæ* (*Chlora, Chironia*);

In the *Solanaceæ* (*Atropa, Habrotamus, Hyoscyamus, Lycopersicon, Solanum, Witheringia*);

In the *Scrophulariaceæ* (*Hemitomus, Pedicularis, Verbascum*; not in *Veronica* and *Chelone*);

In the *Labiatæ* (*Salvia, Rosmarinus,* and *Westringia,* genera with unilocular anthers; and *Lamium, Leonurus,* and *Marrubium* with perfect anthers);

In the *Acanthaceæ* (*Acanthus, Justicia,* &c.);

And, lastly, in some *Orobancheæ* (*Lathræa*; not in *Orobanche* and *Phelipæa*).

The following families, also belonging to the Corollifloræ, appear to be destitute of placentoids:—the *Gesneriaceæ*, *Polemoniaceæ*, *Apocyneæ*, *Convolvulaceæ*, *Primulaceæ*, *Plumbagineæ*, and *Plantagineæ*.

It is remarkable that among the Corollifloræ the orders with labiate flowers are most frequently provided with placentoids.

The presence of placentoids appearing to be in relation with organographic characters, it will be easily understood that it may be made use of as a complementary character in the investigation of natural affinities.

5. *Philosophy of the placentoids.*—Under this head we might consider the placentoids from several points of view, recurring to their biological part, &c.; but I circumscribe the question to this single point, the appreciation of the existence of placentoids with regard to the measurement of the organic gradation of vegetable species. It may be said, by reference to the facts acquired by science, that to put the question is to solve it.

In fact it is admitted (and the evidence is superabundant) that the Monocotyledons are less elevated in organization than the Dicotyledons. Now the Monocotyledons have no placentoids.

With regard to the Dicotyledons, the question of gradation among their classes, long under discussion, seems to have at last arrived at this solution:—The gamopetalous plants are of a higher order than the dialypetalous species; and among the former the families with the ovary united to the calyx must occupy a place below those with the ovary free—that is to say, below the Corollifloræ. Now we have proved the general existence of placentoids in the Corollifloræ. Hence these organs are an attribute of the plants which are most elevated in organization.—*Comptes Rendus*, January 29, 1866, pp. 215–218.

On the Method of Flight of the Flyingfish.

By Horace Mann. [*In a letter to F. W. Putman.*]

I have been watching the flyingfish to-day. They are very abundant; and though you may know all about them from persons more competent to see and describe than I, yet I venture to send you a few notes on them in my journal. I had supposed that they must acquire some considerable momentum below the surface before rising above it, and for that reason wished to see if the motion of the fish immediately after leaving the water was more accelerated than during the later portions of its flight (for it is obviously a true flight). I think that I have been able to discover some slight differences in the rates of motion immediately after leaving the water and later in their course; but I also think their motion is kept up by the fins, and also that the weight is sustained by them. They do not appear to leave the water at a large angle, but otherwise—as near as I have been able to judge, about 5° or 6°. They plainly have the power of altering